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KENTUCKY ECONOMY
Review & Perspective

THE KENTUCKY COUNCIL OF ECONOMIC ADVISORS
University of Kentucky, Lexington, Kentucky 40506

September 1979
Vol. 3 No. 3

KCEA Review and Forecast

By Charles W. Hultman*

Early figures suggest that one of the longest peacetime periods of continued economic growth ended during the first part of 1979. The expansion, which started in March of 1975, resulted in a relatively high rate of growth in real GNP and increased use of the nation's working age population. However, especially in recent years, it also generated a high rate of inflation, a slow growth in productivity, and balance of payments difficulties.

A major concern is whether or not the 2.4 percent drop in second quarter real Gross National Product will develop into a long and/or severe recession. Much of the decline in the second quarter was related to energy and motor vehicles. A decision on the part of consumers to shift back in favor of larger cars and a rate of inflation which does not require unusually restrictive monetary and fiscal restraint may mean the recession is both mild and short lived. However, efforts at the national level to reduce the rate of inflation may not have a significant impact on the price level, but instead may contribute to a contractive effect on production and employment.

The latest forecast for the U.S. economy made by Wharton Econometric Associates is dated 1 August 1979. This forecast, which is used as a basis for the Kentucky Quarterly Econometric Model forecast, projects a slight decline in real GNP for each of the last three quarters of 1979; for the entire year, real GNP is expected to increase only by about 1.25 percent. Wharton also projects positive real GNP growth during the first three months of 1980. Inflation would remain at the double digit level for both 1979 and 1980; the unemployment rate would increase from 6.0 percent in 1978 to 6.1 percent in 1979 and to 7.3 percent in 1980.

A mild and short-lived recession may mean that Kentucky Personal Income will continue to grow, although much of this growth is likely to reflect price inflation. The Kentucky Quarterly Model (see pages 3-5) projects Personal Income to rise by 13.4 percent from $23.25 billion in 1978 to $26.37 billion in 1979 and by 11.3 percent to $29.34 billion in 1980. If inflationary effects are taken into consideration, real Personal Income can still be expected to rise by 2 to 3 percent in both 1979 and 1980.

The civilian labor force is projected to rise from 1,583 (see Technical Note, page 12) thousand in 1978 to 1,644 thousand in 1979 and 1,650 thousand in 1980. The unemployment rate is expected to increase somewhat in both 1979 and 1980 but to remain below the national average.

Continued net employment expansion is expected in such sections as coal mining, wholesale and retail trade, finance, insurance, and real estate, and services. A net decline in employment is anticipated in manufacturing, contract construction, federal government and agriculture.

Conditions in Kentucky will be affected not only by the degree of monetary and fiscal restraint imposed at the national level, and developments in the automobile industry, but also by consumer and investor expectations regarding the future of coal as a source of energy. A firm and early commitment on the part of the Carter administration and Congress will stimulate production in the coal and related industries of the Commonwealth. Expected increases in U.S. agricultural exports will also help the Kentucky agricultural sector.

Inflation will remain a continuing concern to Kentuckians as well as the nation, especially those on a relatively fixed income. The Consumer Price Index stood at 216.6 in June (with 1967 = 100). Most seriously affected has been the consumer purchase of medical care, food and beverages, and housing.

In conclusion, existing data suggest that the U.S. is in the early part of what is projected to be a mild recession. Recovery, in the sense of a rising real GNP, is expected in early 1980 although the unemployment rate will continue to rise slightly and inflation remains a problem. The Kentucky economy will probably be affected less adversely than the national economy, particularly with early federal legislation which promotes coal usage and with increased strength in the auto industry.

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*Charles W. Hultman is the Associate Dean of the Office for Research, College of Business and Economics, University of Kentucky, and Chairman of the KCEA.

In recent months, Governor Julian M. Carroll has appointed two new members to the Kentucky Council of Economic Advisors: **John B. Clarke**, Louisville and **John S. Swift**, Lexington.

John B. Clarke is Manager of Community Affairs and Facilities Services Operation at the General Electric Company, Louisville, and has been with G.E. since 1940. Throughout his career he has been involved with a variety of professional and community organizations. Currently Mr. Clarke is Chairman of the Executive Committee of the Kentucky Chamber of Commerce, Chairman of the Board of Housing NOW, Inc., and a former Chairman of the Board of Associated Industries of Kentucky. He serves on the Board of Directors for several organizations and serves on a number of commissions, including the (Louisville) Metropolitan Economic Advisory Commission, the Kentucky Economic Development Commission, the Kentucky Energy Council and the Kentucky Minority Business Advisory Commission. Mr. Clarke attended Pennsylvania State College and the Graduate School of Business, Columbia University. He replaces General Dillman Rash, also of Louisville, whose term on the KCEA has expired. Mr. Clarke's term extends to January 1983.

John S. Swift, treasurer of the First Security Corporation of Kentucky, and a first vice president of First Security National Bank and Trust Company of Lexington, is an alumnus of the University of Kentucky and of the School of Bank Administration at the University of Wisconsin. He is active in several professional and community organizations, among them, the Central Kentucky Chapter of the Bank Administration Institute, the United Way of the Bluegrass, the Bluegrass Council of the Boy Scouts of America and the Bluegrass Chapter of the National Association of Accountants. He was director of the National Association of Accountants during 1965-67. Mr. Swift replaces William L. Rouse, also from Lexington, who has resigned from the KCEA. His term on the Council will extend to January 1981.

We welcome both men to the Kentucky Council of Economic Advisors and are pleased to benefit from the perspectives they bring.

* * *

Training sessions in the use of the Kentucky Economic Information System–Frankfort are well under way. Personnel from the Bureau of Computer Services, the Council on Higher Education, the Development Cabinet, the Legislative Research Commission, and from the Kentucky Departments of Labor, Natural Resources and Environmental Protection, Revenue, and Transportation have participated. Participants in the EIS/Frankfort training sessions have received a draft of Part IV to the *EIS User Manual*, describing the capabilities of the Kentucky Economic Information System–Frankfort. Persons from other state agencies who wish to schedule an EIS/Frankfort training session should contact Margaret O. Adams, Manager, KEIS, 606-258-4626.

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The *Council of Economic Advisors Annual Report–1979* has been published. It includes a chapter on the national economic situation, another on the Kentucky economic situation, a chapter comparing the Kentucky economy with those of several other states, two chapters considering Kentucky taxes, and a final chapter dealing with the energy factors affecting the Kentucky economy. Single copies of the *Annual Report–1979* may be obtained from the KCEA.

The Council of Economic Advisors has also recently published the eighth in its continuing series of policy papers: "Toward a Debt Policy for Kentucky," by Richard E. Gift. In

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Published by the
Kentucky Council of Economic Advisors
451 Commerce Building
University of Kentucky
Lexington, Kentucky 40506
(606) 258-4626

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The *Kentucky Economy: Review and Perspective* is paid for with state funds and published by the Kentucky Council of Economic Advisors (KCEA) Research Staff. The KCEA is a state government agency, staff support for which is provided by the Center for Applied Economic Research, a unit of the Office for Research, College of Business and Economics, University of Kentucky.

This quarterly publication is intended, primarily, to provide forecasts and current information concerning the Kentucky economy. More generally it provides a forum for the publication of short, expository articles dealing with current research or information systems, the focus of which is some aspect of the Kentucky economy.

Articles submitted for publication should be sent to the Editor at the address given above. All submissions will be reviewed independently by persons recognized as knowledgeable in the specific subject discussed. However, the ultimate responsibility for content rests with the author.

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Kentucky Econometric Model Forecast

By Charles G. Renfro*

This forecast for Kentucky is based upon an assumed three quarter decline in real GNP from the second through the fourth quarter of 1979. The forecast assumptions include predictions of the values of national economic variables taken from the August 1, 1979 *Control Forecast* made by the Wharton Econometric Forecasting Associates, using the Wharton Quarterly Econometric Model of the United States.

The likely impact on Kentucky of the projected three quarter national recession is shown in tables on this page and pages 4 and 5 to include a three quarter decline in non-agricultural wage and salary employment, beginning in the third quarter of 1979. During 1980, a recovery in employment is projected; however, year-to-year, between 1979 and 1980, there is a net decline. In contrast, aggregate personal income continues to increase throughout the forecast period, but since the rate of inflation in both 1979 and 1980 may exceed 10 percent, the lion's share of the personal income increase is likely to be consumed by this inflation.

It is important to note that all the figures shown for 1978 are *forecasts*. Although preliminary employment and personal income estimates for 1978 have been published—and can be retrieved from the Kentucky Economic Information System data banks—not all of the 1978 data used by the Kentucky Quarterly Model are yet available. See also *Technical Note* on page 12.

Charles G. Renfro is Acting Executive Director of the KCEA.

ANNUAL SUMMARY TABLE
SELECTED ECONOMIC INDICATORS

Description	1978	1979	1980
Personal Income (Millions)	23249.3	26374.2	29340.4
% Chg.: Ky. Personal Income	13.07	13.44	11.25
Wage and Salary Disbursement	14132.0	15975.2	17681.9
Mfg. Wage & Salaries	4148.3	4669.2	5312.9
Non-Mfg. Wage & Salaries	9983.7	11305.9	12369.1
Non-Agri. Wage & Salary Empl.	1230.9	1262.7	1254.0
% Chg.: Ky. Non-Ag. Empl.	6.66	2.59	-0.69
Manufacturing Employment	294.0	291.3	290.3
Durable Goods	169.0	168.1	166.4
Non-Durable Goods	125.0	123.3	123.9
Non-Mfg., Non-Agri. Empl.	936.8	971.4	963.7
Civilian Labor Force	1583.4	1643.8	1650.3
Ky. Unemployment Rate (%)	5.1	5.6	6.2

Forecast Date: August 5, 1979.

QUARTERLY FORECAST TABLE
SELECTED ECONOMIC INDICATORS

Description	1979.1	1979.2	1979.3	1979.4	1980.1	1980.2	1980.3	1980.4
Personal Income (Millions)	25575.0	26173.3	26589.6	27159.1	28046.2	28774.6	29790.8	30750.0
% Chg.: Ky. Personal Income	12.46	9.69	6.52	8.85	13.72	10.80	14.89	13.52
Wage and Salary Disbursement	15655.7	15938.8	15990.7	16315.4	16935.4	17360.1	17890.1	18542.1
Mfg. Wage & Salaries	4666.7	4654.7	4619.5	4735.9	5027.8	5202.3	5383.6	5637.7
Non-Mfg. Wage & Salaries	10989.0	11284.0	11371.2	11579.4	11907.6	12157.8	12506.5	12904.3
Non-Agri. Wage & Salary Empl.	1262.1	1272.5	1264.3	1252.1	1243.9	1249.2	1258.0	1264.8
% Chg.: Ky. Non-Ag. Empl.	3.85	3.34	-2.56	-3.80	-2.58	1.72	2.83	2.19
Manufacturing Employment	297.4	292.5	288.8	286.7	286.1	288.0	291.9	295.3
Durable Goods	172.8	168.8	166.1	164.5	164.1	165.6	167.1	168.8
Non-Durable Goods	124.6	123.6	122.7	122.2	122.0	122.4	124.8	126.5
Non-Mfg., Non-Agri. Empl.	964.7	980.0	975.4	965.4	957.8	961.2	966.1	969.5
Civilian Labor Force	1634.4	1651.1	1648.4	1641.2	1635.8	1644.7	1656.2	1664.5
Ky. Unemployment Rate (%)	5.4	5.5	5.7	5.9	6.1	6.2	6.2	6.2

Forecast Date: August 5, 1979.

KENTUCKY QUARTERLY ECONOMETRIC MODEL FORECAST
PERSONAL INCOME

Description	Quarterly Forecast Data								Annual		
	1979.1	1979.2	1979.3	1979.4	1980.1	1980.2	1980.3	1980.4	1978	1979	1980
Personal Income (Millions)	25575.0	26173.3	26589.6	27159.1	28046.2	28774.8	29390.8	30750.0	23549.3	26374.2	29340.4
Wage & Salary Disbursements	15655.7	15938.8	15990.7	16318.4	16935.4	17360.1	17890.1	18542.1	14132.0	15975.2	17681.9
Non-Agric.Wages & Salaries	15486.8	15773.4	15822.6	16146.7	16761.6	17186.7	17718.0	18370.4	13996.5	15807.4	17509.2
Manufacturing	4666.7	4654.7	4619.5	4735.8	5027.8	5202.3	5383.6	5637.7	4148.3	4669.2	5312.9
Durable Goods	2786.9	2741.8	2692.1	2752.2	2909.8	2980.9	3097.8	3244.5	2492.7	2743.2	3058.2
Nondurable Goods	1879.8	1913.0	1927.4	1983.8	2118.1	2221.5	2285.8	2393.1	1655.6	1926.0	2254.6
Mining	1228.3	1201.1	1189.8	1224.0	1304.9	1385.9	1439.2	1486.4	915.3	1211.0	1404.1
Coal Mining	1157.1	1130.8	1118.0	1149.5	1226.4	1302.6	1351.3	1393.7	854.4	1138.8	1318.5
Other Mining	71.0	70.3	71.8	74.5	78.5	83.4	87.9	92.7	61.0	72.2	85.6
Contract Construction	809.9	830.5	729.6	721.2	743.4	761.4	795.5	853.3	814.0	787.8	789.4
Regulated Industries	1100.9	1135.9	1134.6	1224.6	1250.7	1260.3	1282.7	1345.9	974.2	1134.0	1284.9
Wholesale & Retail Trade	2454.1	2556.6	2581.0	2594.1	2646.7	2715.9	2802.1	2891.4	2236.3	2546.3	2764.0
Services	1908.0	2018.3	2033.4	2096.1	2178.1	2199.7	2249.4	2369.6	1727.6	2012.7	2260.0
Finance, Ins. & Real Estate	546.3	590.7	642.5	679.3	713.9	731.2	762.1	779.1	484.8	614.5	746.6
Government	2772.7	2759.6	2824.5	2860.9	2893.9	2930.1	2960.5	3003.0	2695.8	2811.8	2947.4
Civilian Government	2231.7	2293.6	2318.4	2350.7	2380.9	2408.4	2434.5	2471.0	2242.3	2309.1	2433.6
Federal Civilian	630.1	615.0	616.8	627.4	634.2	637.1	638.9	650.3	605.8	613.4	640.1
State & Local Gov't	1661.5	1680.6	1701.7	1723.3	1746.7	1771.3	1795.7	1820.7	1636.5	1691.7	1783.5
Federal Military	501.0	434.0	466.0	510.1	515.0	517.0	526.0	532.0	483.5	502.8	523.8
Agricultural Wage & Salary	168.9	165.4	168.1	168.7	174.0	174.4	172.1	171.7	135.5	167.8	172.8
Other Labor Income	1812.9	1834.4	1893.7	1963.3	2081.2	2163.1	2234.7	2402.6	1623.4	1885.8	2231.5
Proprietors Net Income	2514.7	2587.2	2570.4	2537.0	2585.4	2591.8	2587.2	2590.4	2139.2	2546.0	2581.2
Non-Farm	1758.6	1849.6	1850.7	1828.3	1848.7	1916.0	1950.6	1980.7	1633.6	1821.4	1926.5
Farm	756.0	705.9	719.7	717.2	700.6	675.8	636.4	599.8	505.6	724.6	654.6
Residence Adjustment	266.8	270.6	271.9	280.5	298.8	307.1	313.6	324.6	239.8	272.5	311.0
Other Income Items	6456.0	6623.4	7003.9	7299.9	7403.8	7597.4	8001.9	8196.1	6073.5	6845.5	7799.8
Property Income	2821.2	2934.7	3038.7	3064.0	3058.3	3092.7	3138.8	4195.9	2678.7	2939.8	3120.8
Transfer Payments	3634.8	3688.4	4013.2	4235.9	4345.5	4504.7	4863.6	5000.2	3394.1	3905.7	4679.3
Less: Personal Contributions for Social Insurance	1133.0	1158.9	1145.8	1177.2	1223.1	1249.8	1276.7	1305.1	958.6	1142.7	1263.0

Forecast Date: August 5, 1979

selected indicators OF ECONOMIC ACTIVIT

These tables of selected indicators of economic activity were prepared by a special-purpose program of the Kentucky Economic Information System. The data in the tables are reported figures which were obtained from a variety of state and federal agencies, as well as from private firms.

UNITED STATES DATA

	Apr. 1979	May 1979	Jun. 1979	Qtr. II 1979	%Chg. 79-1 79-11	%Chg 78-11 79-11
CONSUMER PRICE INDEXES (1967=100)						
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): ALL ITEMS	211.50	214.09	216.59	214.06	3.43	10.70
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): FOOD AND BEVER	226.29	228.19	229.29	227.93	2.81	10.95
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): HOUSING	219.29	222.39	225.50	222.56	3.31	11.24
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): APPAR & UPKEEP	165.39	166.09	165.69	165.73	2.22	5.99
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): TRANSPORTATION	202.89	207.69	212.59	207.73	6.05	13.35
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): MEDICAL	235.09	236.29	237.69	236.36	1.70	9.00
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): ENTERTAINMENT	186.50	187.79	188.19	187.49	2.21	6.53
CONSUMER PRICE INDEX, ALL URBAN CONSUMERS (CPI-U): OTHER	193.19	193.89	194.50	193.86	1.11	7.46
PRODUCER PRICE INDEXES (1967=100)						
PRODUCER PRICE INDEX, ALL FINISHED GOODS	211.19	212.39	213.39	212.33	2.47	10.05
PRODUCER PRICE INDEX, FINISHED CONSUMER GOODS	210.00	211.29	212.39	211.23	2.64	10.43
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS	235.29	237.69	239.79	237.59	4.04	11.21
PRODUCER PRICE INDEX, INTERMEDIATE MATERIALS FOR MANUFACTURING	228.50	230.29	231.50	230.09	3.89	11.51
PRODUCER PRICE INDEX, CRUDE MATERIALS	279.89	282.19	283.00	281.69	4.69	16.51
PRODUCER PRICE INDEX, CRUDE FOODSTUFFS AND FEEDSTUFFS	251.59	251.89	248.19	250.56	-3.85	14.04
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL-SPOT(1967=100)	391.69	392.19	392.00	391.96	-0.74	-2.89
PRODUCER PRICE INDEX, BITUM. COAL, INDUSTRIAL-CONTRACT(JUNE'67=100)	126.00	127.29	127.59	126.96	1.76	6.78
LABOR FORCE (MILLIONS)						
LABOR FORCE, CIVILIAN, SEASONALLY ADJUSTED	102.11	102.24	102.52	102.29	-0.17	2.08
UNEMPLOYMENT RATE, TOTAL, SEASONALLY ADJUSTED	5.79	5.19	6.00	5.66	-1.04	-4.49
UNEMPLOYMENT RATE, BLACKS & OTHER RACIAL MIN. (SEAS ADJ)	11.79	10.59	12.39	11.59	1.45	-3.33
EMPLOYMENT, TOTAL, SEASONALLY ADJUSTED	96.17	96.31	96.75	96.41	-0.18	2.30
PERSONAL INCOME, TOTAL, SEASONALLY ADJUSTED AT AN ANNUAL RATE	1881.19	1893.59	1903.00	1892.59	2.77	12.49
PRIVATE RESIDENTIAL BLDG. (6000 PERMIT ISSUING PLACES (SAAR))	1517.00	1618.00	1684.00	4819.00	7.37	-14.75
TOTAL INSTALLMENT CREDIT OUTSTANDING AT END OF MONTH	282.04	285.27	288.65	285.49	4.03	25.26
COMPOSITE INDEX OF 12 LEADING INDICATORS	140.69	141.09	140.89	140.89	-1.65	-0.75
INDEX OF INDUSTRIAL PRODUCTION, SEASONALLY ADJUSTED	150.00	151.29	151.39	151.06	-0.26	4.90
INTEREST RATE, YIELD ON 3-MONTH TREASURY BILLS	9.48	9.58	9.03	9.37	0.14	44.62

INCOME AND CREDIT IN BILLIONS OF DOLLARS; PERMITS IN THOUSANDS;
INDUSTRIAL PRODUCTION & 12 LEADING INDICATORS=1967=100

KENTUCKY DATA

LABOR FORCE (000 PERSONS)						
LABOR FORCE, TOTAL CIVILIAN	1511.00	1521.19	1546.89	1526.36	1.06	-1.98
UNEMPLOYMENT RATE (NOT SEASONALLY ADJUSTED)	4.69	4.19	4.79	4.56	30.45	-4.27
EMPLOYMENT, TOTAL, BY PLACE OF RESIDENCE (INCL. PERSONS ON STRIKE)	1440.50	1457.09	1472.09	1456.56	3.22	-1.76
EMPLOYMENT, AGRICULTURAL	62.59	76.89	86.19	73.23	38.96	-2.35
EMPLOYMENT, TOTAL NON-AGRICULTURAL WAGE AND SALARY	1272.69	1284.39	1281.50	1279.33	3.11	1.78
EMPLOYMENT, BITUMINOUS COAL & LIGNITE MINING (SIC 12)	54.19	53.79	54.29	54.09	0.61	1.19
EMPLOYMENT, CONTRACT CONSTRUCTION	68.50	73.89	75.00	72.46	21.52	1.77
EMPLOYMENT, TOTAL MANUFACTURING	293.69	295.29	293.59	294.19	0.70	1.92
EMPLOYMENT, MANUFACTURING, DURABLE	171.00	170.79	168.39	170.06	0.81	3.02
EMPLOYMENT, MANUFACTURING, NON-DURABLE	122.69	124.50	125.19	124.13	0.56	0.45
EMPLOYMENT, TRANSPORTATION, COMMUNICATIONS & PUBLIC UTILITIES	68.09	69.89	70.69	69.56	0.82	2.96
EMPLOYMENT, WHOLESALE & RETAIL TRADE	279.59	280.59	281.79	280.66	4.15	7.05
EMPLOYMENT, FINANCE, INSURANCE & REAL ESTATE (SIC 60-67)	50.19	50.50	51.09	50.56	2.56	3.33
EMPLOYMENT, SERVICES (SIC 70-80)	209.79	212.19	212.29	211.43	3.55	5.45
EMPLOYMENT, CIVILIAN GOVERNMENT	243.39	243.39	238.00	241.59	1.13	2.82
EMPLOYMENT, STATE & LOCAL GOVERNMENT	03.29	203.19	192.49	201.33	0.85	3.43

	Apr. 1979	May 1979	Jun. 1979	Qtr. II 1979	%Chg. 79-1 79-11	%Chg. 78-11 79-11
HOURS AND EARNINGS OF PRODUCTION WORKERS IN MANUFACTURING						
AVG WEEKLY HOURS, PROD WORKERS, TOTAL MANUFACTURING	39.89	39.69	39.79	39.13	-0.76	-1.26
AVG WEEKLY HOURS, PROD WORKERS, MANUFACTURING DURABLES	39.90	40.19	40.69	39.63	-2.38	-1.23
AVG WEEKLY HOURS, PROD WORKERS, NON-DURABLE MANUFACTURING	37.69	37.00	38.69	38.46	1.49	-0.68
AVG HOURLY EARN, PROD WORKERS, TOTAL MANUFACTURING	6.69	6.73	6.78	6.75	-2.98	9.69
AVG HOURLY EARN, PROD WORKERS, MANUFACTURING DURABLES	7.03	7.03	7.07	7.06	-2.61	11.11
AVG HOURLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	6.25	6.36	6.39	6.34	4.10	6.25
AVG WEEKLY EARN, PROD WORKERS, TOTAL MANUFACTURING	253.97	259.16	270.23	264.44	-2.22	7.73
AVG WEEKLY EARN, PROD WORKERS, MANUFACTURING DURABLES	267.13	284.61	288.15	279.97	0.18	9.19
AVG WEEKLY EARN, PROD WORKERS, NON-DURABLE MANUFACTURING	236.00	248.42	247.87	244.02	-5.62	5.53
INDEX OF PRICES RECEIVED BY KY FARMERS (1972=100)						
INDEX OF PRICES REC'D BY KY FARMERS, CROP AND LIVESTOCK PRODUCTS	174.15	171.34	166.24	170.71	-4.91	14.04
INDEX OF PRICES REC'D BY KY FARMERS, LIVESTOCK PRODUCTS	203.52	193.29	187.69	194.50	-6.10	16.97
INDEX OF PRICES REC'D BY KY FARMERS, CROPS	155.71	155.57	155.00	155.75	-3.99	7.78
MINING (MILLIONS OF TONS, MILLIONS OF TAX DOLLARS)						
PHYSICAL OUTPUT OF COAL, EASTERN KENTUCKY -- NOT SEAS ADJUSTED	7.84	8.14	9.01	25.66	-0.15	4.39
PHYSICAL OUTPUT OF COAL, WESTERN KENTUCKY -- NOT SEAS ADJUSTED	3.99	4.03	4.44	12.52	23.71	0.71
AVG HOURLY EARN, PROD WORKERS, BITUMINOUS COAL AND LIG. MINING	10.61	10.62	11.57	10.94	9.76	13.54
AVG WEEKLY EARN, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	448.35	449.64	504.38	467.56	4.01	23.33
AVG WEEKLY HOURS, PROD WORKERS, BITUMINOUS COAL & LIGNITE MINING	42.19	42.29	43.59	42.69	-0.25	8.95
TAX RECEIPTS, KENTUCKY, COAL SEVERANCE TAX	12.60	14.21	15.00	42.81	*	6.65
CONSTRUCTION (MILLIONS OF $, NO. OF PRIVATE RESID. UNITS--NOT SEAS ADJ)						
VALUE OF CONSTRUCTION CONTRACTS, RESIDENTIAL & NON RES	87.00	143.00	159.00	409.00	3.76	56.85
PERMIT AUTHORIZED CONSTRUCTION, NO. OF 1 FAMILY RESID. UNITS	1032.00	1041.00	895.00	2969.00	85.92	9.50
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, 1 FAMILY RESID. UNITS	38.27	42.36	36.14	116.74	99.61	4.20
PERMIT AUTHORIZED CONSTRUCTION, NO. OF RESID. UNITS, TOTAL	1407.00	1436.00	1271.00	4116.00	76.88	10.58
VALUE OF PERMIT AUTHORIZED CONSTRUCTION, ALL UNITS, TOTAL	44.87	49.36	46.53	140.76	93.23	8.58
ELECTRIC POWER SALES (MIL KWH)						
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST, INC. SOU	1467.75	1474.70	NA	NA	NA	NA
ELECTRICITY SALES, KWH, TO INDUSTRIAL & COMMERCIAL CUST, EX.TVA	2043.93	2053.20	NA	NA	NA	NA
ELECTRICITY SALES, KWH, TO DEPARTMENT OF ENERGY	1363.08	1417.57	NA	NA	NA	NA
RETAIL SALES (000$, 000 CARS)						
TAX RECEIPTS, KENTUCKY, SALES AND GROSS RECEIPTS TAXES	58.74	59.20	58.91	176.86	*	7.21
NEW PASSENGER CAR REGISTRATIONS, TOTAL, NOT SEAS. ADJ.	8.46	11.07	25.10	44.64	168.02	125.82
FINANCE AND INSURANCE (MILLIONS OF DOLLARS)						
NET LOANS MADE & ACQUIRED BY KY SAVINGS & LOAN ASSOCIATIONS	55.24	68.60	77.90	201.75	106.46	26.80
SALES OF ORDINARY LIFE INSURANCE	351.25	369.72	350.47	1071.46	11.95	11.59
SELECTED STATE GOVERNMENT RECEIPTS (000 $)						
GENERAL FUND TAX AND NON-TAX REVENUES (MILLIONS OF DOLLARS)	164.27	152.46	123.35	440.28	*	7.89
TAX RECEIPTS, KENTUCKY, SALES AND USE TAXES, TOTAL	48.47	52.88	52.80	152.16	*	7.87
TAX RECEIPTS, KENTUCKY, INCOME TAX, INDIVIDUAL	34.84	40.01	38.16	113.02	*	9.15
TAX RECEIPTS, KENTUCKY, INCOME TAX, CORPORATION	18.60	8.61	41.04	68.34	*	11.86
TAX RECEIPTS, TRANSPORTATION FUND, STATE ROAD FUND,STATE SHARE	31.28	40.83	30.30	102.34	*	5.50
TAX RECEIPTS, KENTUCKY, MOTOR FUELS NORMAL TAX, TOTAL	17.46	15.67	16.15	49.29	*	4.27
TAX RECEIPTS, MOTOR VEHICLE USAGE TAX (INC. RENTALS)	11.05	10.63	10.87	32.56	*	7.95

* -QUARTER TO QUARTER COMPARISONS NOT MEANINGFUL DUE TO SEASONAL VARIATION-
NA - NOT AVAILABLE AT PUBLICATION TIME

The Development Information System for Kentucky

By Barbara Matthews*

The recent years have brought increased interest in computerized information systems and several are available in Kentucky. Most notable is the Kentucky Economic Information System (EIS).[1] The Development Information System for Kentucky (DISK), described in this article, is a complementary computerized system of socio-economic data for Kentucky and is a part of the Agricultural Network Serving Education and Research (ANSER). ANSER is a service of the Kentucky Cooperative Extension Service.

Access to DISK will provide county extension staff and their clients, via computer terminal, tabularized data for each Kentucky county on such subjects as population, income, employment, and other indicators. A proposed analytical package will allow simple data manipulations to show trends in the data or for cross-sectional comparison of two counties or a county with a region. Capability to chart and plot the data will be added to enhance the description of the data. Finally, simulations and other statistical models will be added to the system to maximize the utility of the data.

The development of DISK is a pilot project funded through Title V of the Rural Development Act of 1972. The developers of the system are the Departments of Rural Sociology and Agricultural Economics of the University of Kentucky College of Agriculture and Cooperative Extension Service. During the pilot phase the system is available in the Lincoln Trail (North Central Kentucky) and Wilderness Trail (Southeast Kentucky) Extension areas for testing. If the system receives good response in these areas, the information for other counties will be released and those counties will have access to the system.

The purpose of the DISK project is to provide a problem-solving tool for Extension staff and their clients. The focus of the system is to address rural development issues. Common issues which fall within the rural development domain include industrial development, fire protection service, and impact of population growth. Persons who are in the position of establishing policy or plans for a community or county are those who could be most helped by DISK. DISK is intended to help officials address developmental issues by giving access to the data which are pertinent to their decisions. Sometimes relevant data are not used in the decision-making process if they are not easily accessible or are not available in published form. The information system approach collapses volumes of information to one source, which eliminates the time-consuming search from one library source or government office to another. Also, duplication of effort by persons seeking the same information for other regions is eliminated. The end result is that data and procedures, not normally available to the local officials, can easily be used to support the decision-making process.

As previously mentioned, DISK is maintained on the Agricultural Network Serving Education and Research (ANSER). The ANSER network is composed of a Hewlett Packard mini-computer in the University of Kentucky College of Agriculture and this is connected to the IBM 370/165 at the University of Kentucky Computing Center. The network is completed by the connection of county extension offices with the Hewlett Packard through computer terminals and leased lines. This configuration allows for maximum flexibility to the users. They have the advantages of a large mainframe coupled with an understandable, easy-to-use, interactive support system. The orientation of the ANSER network is to provide programs which require little, if any, previous computer experience to use. The programs are completely self-explanatory and are standardized so procedures do not differ from one program to the next.

The internal structure of the DISK system is hierarchical, where responses to questions cycle the processing of the programs to different segments. Each of these segments in turn triggers new questions. The computer program is based on computer request-user response. When the user has entered sufficient information on the type of data and geographic level required, the data files are accessed and the information is retrieved. The system contains descriptive "help" information which the user can call out if the response is not clear. The option to move back to previous questions is also available. Here again the philosophy is to make a system which facilitates, as much as possible, access to the data.

The data are stored on an online disk pack on the Hewlett Packard computer. The user will have the option of requesting data by county, by an aggregate of counties of the user's choice, or aggregated by extension area, area development district, or the state. Although most of the data are maintained on a county-level, the data are, in some cases, more useful at other geographic levels. For example, information on characteristics of schools will be maintained on a school district level.

[1] Editor's Note: The Kentucky Economic Information System (EIS), operational since 1973, is a public, computer-based source of time-series data on the Kentucky economy and includes computer programs to perform data manipulation and sophisticated statistical analysis. The EIS has been developed and is maintained by the research staff of the Kentucky Council of Economic Advisors. It is available for use by persons having access to the Kentucky state government computing system or to the Kentucky Educational Computing Network (KECNET). Access to the EIS has also been made available through the Agricultural Network Serving Education and Research (ANSER).

The EIS was described in an earlier article in this publication. See: Renfro, Charles, "The Kentucky Economic Information System," *Kentucky Economy: Review & Perspective*, Vol. 1, No. 2, May 1977. Reprints of that article and a brochure describing the EIS are available upon request from the KCEA, 451 Commerce Building, University of Kentucky, Lexington, Kentucky 40506.

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Estimates of energy used are most applicable at a state-level and so are stored that way.

The data are organized by subject area. Thirteen subject areas are planned: 1) Population, 2) Employment, 3) Income, 4) Industry and Commerce, 5) Transportation and Communication, 6) Health and Safety, 7) Recreation, 8) Education, 9) Housing, 10) Government and Community Services, 11) Land Use, 12) Agriculture and Farm Management, and 13) Natural Resources, Energy, and Environment. Within each subject area, the data are organized in a table format and users retrieve an entire table of related data. Normally several years of data are included in one table. In some cases, where the data were collected through special survey, there are no comparative data for other years.

Major sources of data are the Censuses of Population, Agriculture and Governments (U.S. Bureau of the Census). Characteristics of the population of the counties are categorized, for example, by age, race, sex, and residence. Characteristics of the employed population are also available in various breakdowns. The Census of Agriculture provides much of the information for the Agriculture and Farm Management subject area. These figures are available for 1969 and 1974, the years of the two most recent surveys. Tabulations include value of machinery and property, subcomponents of income and expenses, and characteristics of farms by ownership. The variety gives a complete picture of the agricultural situation in Kentucky.

State-produced data are used whenever they are available. Land-use characteristics are taken from surveys conducted by the Kentucky Soil Conservation Service. The *Annual Report* of the Kentucky Department of Mines and Minerals is the source of information on production and employment in mines. The *Annual Report* of the Kentucky Department of Revenue provides a wealth of tax revenue data useful for county planning.

To date, DISK contains over 500 data tables. The choice of data has followed the decision rules: 1) Would the data be widely used?, and 2) Can the data be readily added to the system? The design of the content of the system has followed expressed needs by potential users and is intended to give a good cross-sectional representation of the counties. Data which are not available in at least published summaries are not included since the updating process would be too cumbersome. The future work in DISK will concentrate on adding new data series, updating of tables with more current data, and creating an analytical component.

An important feature of DISK is the users' manual. The manual describes, in detail, the data contained in the tables. The sources of the data, the procedures used to collect the data, and the definitions applied are described. The manual is intended to assist users in the application of the data and interpretation of the results. The manual is presently in preliminary form and is available only to persons participating in the pilot project.

The following tables are output from a DISK run and are included to give the reader a graphic notion of the type of information which will be obtained with access to DISK.

EXAMPLE 1 – OUTPUT FROM DISK

T1 NUMBER EMPLOYED AND PRODUCTION OF COAL MINES: 1974-1977.

	LAUREL COUNTY			
	1974	1975	1976	1977
UNDERGROUND MINES:				
NUMBER OF MINES	17	15	6	3
PERSONS EMPLOYED	84	146	98	7
TONNAGE PRODUCED	76269	137430	32010	4398
SURFACE MINES:				
NUMBER OF MINES	49	112	73	64
PERSONS EMPLOYED	561	938	698	642
TONNAGE PRODUCED	951185	1400378	1173261	1354280
TOTAL ALL MINES:				
NUMBER OF MINES	66	127	79	67
PERSONS EMPLOYED	645	1084	796	649
TONNAGE PRODUCED	1027454	1537808	1205271	1358678

EXAMPLE 2 – OUTPUT FROM DISK

T14 FARM PRODUCTION EXPENSES;
1969, 1974

	HARDIN COUNTY			
	ALL FARMS		FARMS WITH SALES OF $2,500 & OVER	
	1969	1974	1969	1974
TOTAL FARM PRODUCTION EXPENSES IN THOUSANDS	8606	12679	7565	11758
SPECIFIC EXPENSES IN $1,000				
LIVESTOCK & POULTRY PURCHASED	1645	1308	1496	1143
FEED FOR LIVESTOCK PURCHASED	1403	2511	1254	2314
COMMERCIALLY MIXED FORMULA FEEDS	754	1256	705	1180
FEED INGREDIENTS	NA	NA	215	688
WHOLE GRAINS	NA	NA	282	356
HAY, GREEN CHOP & SILAGE	NA	NA	53	90
ANIMAL HEALTH COSTS FOR LIVESTOCK & POULTRY	NA	NA	NA	92
SEEDS, BULBS, PLANTS & TREES	199	346	178	331
COMMERCIAL FERTILIZER	835	1975	733	1869
OTHER AG CHEMICALS	177	346	153	326
LIME	79	NA	63	68
GASOLINE & OTHER PETROLEUM FUEL & OIL FOR FARM BUSINESS	533	773	421	681
HIRED FARM LABOR	567	691	493	651
CONTRACT LABOR	236	30	20	26
MACHINE HIRE & CUSTOMWORK	Z	311	181	289
ALL OTHER PRODUCTION EXPENSES	3010	4387	2635	4035

(continued from page 2)

this paper, Professor Gift extends the historical analysis of the state debt, developed in Policy Paper No. 7, "The Kentucky State Debt." In the new paper, he defines the concept of debt capacity and finds that Kentucky's debt is currently well within its debt capacity. However, he strongly recommends that more complete and specific analyses be made of future debt-financed projects and proposes guidelines for the operation of the new office to be established within the Department of Finance to manage the state's debt. Single copies of this paper are available from the KCEA.

* * *

Margaret O. Adams became Manager of the Kentucky Economic Information System on July 1, 1979. She replaces Paul Coomes who has resigned. Ms. Adams is a graduate of Clarke College (Iowa) and holds a master of arts degree from the University of Wisconsin. She has been on the research staff of the KCEA for the past year. Prior to coming to Kentucky she held a number of professional positions, including several years as Assistant Director and Data Librarian of the Data and Program Library Service at the University of Wisconsin.

* * *

Dr. Charles W. Hultman, Chairman of the KCEA, participated late this spring with the Governor's Economic Develop-

ment Commission in its examination of the administrative recommendations to be made by the Development Commission. Given the growing public concern on the status of the economy, Dr. Hultman is increasingly consulted by the media and asked to comment on the state of the Kentucky economy. Recently he appeared on the WLEX, Channel 18 program, "Your Government" hosted by Sue Wiley and participated on one of the sessions of "Commonwealth Call-in" on WLAP-AM, hosted by Phil Lynch.

Dr. Charles G. Renfro, Acting Executive Director of the KCEA, presented a paper, "Regional Econometric Modeling in the 1980s: Where do we go from here?" at the National Science Foundation–sponsored Conference on Modeling the Multi-regional Economic System, held in Philadelphia, June 14-15, 1979. More recently he presided at a workshop on state and regional econometric models at the summer workshops sponsored by the Association for University Business and Economic Research (AUBER) and held at the Kellogg Center, Michigan State University, August 19-21, 1979.

The **Kentucky Economic Association** will hold its fifth annual meeting on Friday, October 26, 1979. The meetings are scheduled to be held at the Hyatt Regency in Louisville. Sessions of the meeting will consider a variety of issues related to the economy of the Commonwealth: economic education in Kentucky, simplification of the Kentucky income tax, economic development in Kentucky: urban vs. rural, and the economic outlook for Kentucky. Roy Bahl, Director of the Urban Studies Institute, the Maxwell School, Syracuse University will give the luncheon address. He will be speaking on the relationship between the federal budget and the cities, or, what the federal government can do concerning urban problems. For further information contact Kris Hobson, 451 Commerce Building, University of Kentucky, Lexington, Kentucky 40506, or phone, 606-258-4626.

* * *

In August 1979 the U.S. Bureau of the Census issued the estimates of the population of Kentucky counties: July 1, 1977 (revised) and 1978 (provisional). These estimates were prepared by the Urban Studies Center at the University of Louisville as part of the federal-state cooperative program for population estimates. A rank-ordered table of these 1978 Kentucky county-level population estimates is reprinted below.

KENTUCKY ECONOMIC INFORMATION SYSTEM

POPULATION OF KENTUCKY COUNTIES IN RANK ORDER
1978

RANK	COUNTY	POPULATION	RANK	COUNTY	POPULATION	RANK	COUNTY	POPULATION
1	JEFFERSON	678.2	41	OHIO	21.9	81	FLEMING	11.7
2	FAYETTE	191.6	42	CLAY	21.8	82	HENRY	11.7
3	KENTON	132.0	43	SHELBY	21.3	83	LARUE	11.6
4	CAMPBELL	83.8	44	MEADE	21.1	84	ANDERSON	11.4
5	DAVIESS	81.1	45	SCOTT	20.2	85	MORGAN	11.2
6	HARDIN	78.3	46	BOURBON	19.7	86	GREEN	11.0
7	PIKE	75.8	47	GRAYSON	19.5	87	PENDLETON	10.9
8	CHRISTIAN	67.6	48	TAYLOR	18.9	88	MCLEAN	10.8
9	WARREN	64.4	49	LINCOLN	18.3	89	BUTLER	10.6
10	MCCRACKEN	62.7	50	KNOTT	18.2	90	JACKSON	10.6
11	BOYD	54.9	51	MERCER	18.1	91	WASHINGTON	10.4
12	MADISON	49.5	52	MONTGOMERY	18.0	92	GARRARD	10.1
13	HOPKINS	45.4	53	UNION	18.0	93	TRIGG	10.0
14	FLOYD	43.5	54	ROWAN	17.5	94	POWELL	9.6
15	PULASKI	43.4	55	MASON	17.2	95	EDMONSON	9.5
16	BOONE	41.8	56	BREATHITT	17.1	96	LIVINGSTON	9.5
17	HARLAN	40.9	57	MARION	17.0	97	BATH	9.4
18	FRANKLIN	39.2	58	WOODFORD	17.0	98	CRITTENDEN	9.2
19	BULLITT	39.1	59	WAYNE	16.4	99	FULTON	9.1
20	HENDERSON	38.7	60	BRECKINRIDGE	16.0	100	BALLARD	9.0
21	GREENUP	37.0	61	HART	15.3	101	CLINTON	8.9
22	LAUREL	35.2	62	MCCREARY	15.2	102	CARROLL	8.8
23	BELL	33.5	63	WEBSTER	15.2	103	METCALFE	8.7
24	GRAVES	33.1	64	HARRISON	14.8	104	OWEN	8.3
25	MUHLENBERG	32.0	65	CASEY	14.6	105	BRACKEN	7.7
26	BARREN	30.9	66	SIMPSON	14.5	106	HANCOCK	7.4
27	WHITLEY	30.9	67	ADAIR	14.2	107	LEE	7.4
28	PERRY	29.5	68	LEWIS	13.9	108	CUMBERLAND	7.2
29	CALLOWAY	28.9	69	LESLIE	13.7	109	NICHOLAS	7.0
30	KNOX	28.7	70	ESTILL	13.6	110	ELLIOTT	6.4
31	LETCHER	27.8	71	ROCKCASTLE	13.4	111	WOLFE	6.4
32	CLARK	26.9	72	ALLEN	13.3	112	CARLISLE	6.3
33	NELSON	26.4	73	CALDWELL	13.2	113	HICKMAN	6.2
34	MARSHALL	24.4	74	LAWRENCE	12.8	114	LYON	6.2
35	JESSAMINE	24.3	75	MARTIN	12.5	115	TRIMBLE	5.9
36	BOYLE	23.9	76	GRANT	12.3	116	SPENCER	5.8
37	OLDHAM	23.6	77	MAGOFFIN	12.3	117	OWSLEY	5.5
38	CARTER	23.3	78	RUSSELL	12.2	118	MENIFEE	4.7
39	JOHNSON	22.7	79	TODD	12.1	119	GALLATIN	4.6
40	LOGAN	22.3	80	MONROE	12.0	120	ROBERTSON	2.1

DATA ARE GIVEN IN THOUSANDS

SOURCE: U.S. BUREAU OF THE CENSUS; URBAN STUDIES CENTER, UNIVERSITY OF LOUISVILLE

TECHNICAL NOTE

Conceptually, the civilian labor force for Kentucky consists of those state residents who are either working or are looking for work; that is, the sum of the employed and the unemployed.[1] However, the figures reported in "Selected Indicators of Economic Activity" (page 7) for the Kentucky civilian labor force, as well as for total employment and unemployment, are obtained on the basis of interviews with a small sample of households, not by counting the employed and the unemployed. These interviews are conducted by the U.S. Bureau of the Census as a part of the Current Population Survey (CPS) program.

Alternative sources of estimates of employment and unemployment are the "790" and "ES-202" programs operated by the U.S. Bureau of Labor Statistics, jointly with the Kentucky Department for Human Resources. Predicted values of some of these estimates for individual industries appear in the model forecast tables on pages 3 and 5. However, the 790 and ES-202 programs fall short of providing conceptually adequate estimates of total employment and unemployment.[2] The employment estimates are obtained on the basis of reports filed by a large sample of employers, and are therefore estimates of employment by place of work, not by place of residence. The unemployment estimates obtained as a count are obtained on the basis of unemployment insurance claims, and consequently exclude those not eligible or who do not apply. Adjustments must be made in order to obtain an estimate of the total unemployed; the best known, most widely used adjustment procedure is the "70 Step Method."

Consequently there are two methods of estimating the civilian labor force and total employment. However, there should be a stable relationship between the alternative estimates, since the conceptual difference between *employment by place of residence* and *employment by place of work* is *net employment-out-of-state*. Judging on the basis of independent evidence, for Kentucky this residence adjustment, *net employment-out-of-state*, should be positive and should not change drastically over short periods of time.

In fact, this *net employment-out-of-state* figure has recently been negative and during the past six months has increasingly become more negative.[3] It is likely that the figures for the CPS-based civilian labor force and total employment reported on page 7, represent an underestimate of the true values. This possibility is also indicated by the civilian labor force and employment figures for 1978 projected by the Kentucky Quarterly Econometric Model. These projections are made by summing the individually predicted components of employment and unemployment and then making an explicit adjustment for *net employment-out-of-state*.

Footnotes

[1] See Charles G. Renfro and Paul A. Coomes, *Kentucky Economic Information System User Manual*, Lexington, Ky.: Office for Research, College of Business and Economics, University of Kentucky, 1977. Section 2.4, for a detailed description of Employment and Unemployment Concepts and the several data collection programs.

[2] See Brian Motley, "The Unemployment Rate as an Economic Indicator at the State and Local Levels," *Kentucky Council of Economic Advisors Policy Paper Series, No. 3*, Lexington, Ky.: Kentucky Council of Economic Advisors, September 1977.

[3] See also the earlier report on this development in Lawrence K. Lynch, "Kentucky Economic Outlook," *Kentucky Economy: Review and Perspective*, June 1979, pp. 3-4.

Kentucky Economy: Review & Perspective
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